

With the Author's Compliments

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Clinical Lecture

THE ETIOLOGY AND
TREATMENT OF PHTHISIS

BY

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I PROPOSE discussing with you to-day the subject of pulmonary phthisis. When I say this, I feel that it is not unlikely that some of you will conceive the idea that the time occupied at our meeting to-day might be more profitably spent. Familiarity breeds contempt, and you are certainly all familiar with pulmonary phthisis, for the phthisical, like the poor, we have always with us. You all know too, that the recognition of a phthisical invalid is, in most cases, as easy as is the recognition of a poverty stricken waif, and already you cannot but have realised also that our best efforts to relieve the one fail very often just about as hopelessly as do our best efforts to redeem the other.

But it is, in the one case as in the other, our duty to do all we can to help them, and it may be said with truth in either case that our powers for good are dependent (1) on our knowledge of the causes by which the evil is brought about, and (2) on our capability of influencing beneficially, or even removing, those causes. I propose, therefore, in what I am going to consider with you to-day, to discuss specially the subject of the causation and the treatment of phthisis.

The causation of phthisis is a very large subject, and to consider it in detail would occupy a very much longer time

than we have at our disposal. I shall therefore endeavour to limit my remarks to the more general aspects of the question. Now in this connection let me point out that if we regard the subject aright we can I think recognise a remarkable analogy between these two morbid conditions which we have alluded to, viz., poverty and phthisis.

Thus, for example, if we look at man in primitive societies, or in a so-called savage state, we find very little either of poverty or consumption. It is only, indeed, when what we call civilisation has arisen and made some progress, that these two evils can be said to arise. How is this?

Well, first as regards poverty. Amongst primitive uncivilised peoples the wants are small. Climatic conditions being favourable, clothing and dwellings are little needed, and with plenty of warmth and sunlight, food, quantitatively and qualitatively, need be as simple as it is easily supplied. A little rice and fruit is sufficient, and is easily obtained. There is therefore no poverty.

Then, as regards phthisis. The struggle for existence amongst primitive people is physical and entails plenty of sunlight and open-air life. The population is sparse, so the air is fresh and never vitiated by what will produce phthisis at all events. Hence phthisis is unknown.

It is different, however, when civilisation has begun and progressed. Civilisation means the bringing of large numbers of people together. With its progress, the wants of life increase, and these wants being more easily fulfilled by some than by others, poverty begins. Moreover, density of population means less pure air, and a more indoor life, and the struggle for existence being more intellectual, less physical exercise is obtainable and the lungs are less used. Hence occurs phthisis. As I have often told you, pulmonary phthisis may be regarded as the result of disuse of the lungs. Its remarkable frequency amongst those who follow sedentary and indoor occupations, such as composers, engravers, watchmakers, clerks, etc., is all evidence of this. We are, I am sure, not far wrong if we regard phthisis as being one of the sacrifices required to be made for an advancing civilisation, that is to say, for the transference of the struggle for existence from the physical to the intellectual. Now observe here that we are not pessimistic. Adaptation of humanity to new conditions will in time occur, and

phthisis will lessen just as surely as will poverty. We are yet, however, far short of this adaptation in either case.

But now observe a second point in connection with phthisis and disuse of lung. You all know that in the movements of the lung in inspiration and expiration, the apices and posterior borders take the least part. If you, for example, were to make what have been called pleural windows in an animal, one over the upper part, and the other over the lower part of the lung, you would see that the gliding movements of pulmonary against costal pleura, were very slight indeed at the upper part, but well marked below. So much, indeed, is this the case that the apices, specially posteriorly, and the posterior borders of the upper lobe may be regarded as fixed points. Now, phthisis being a disease of lung disuse, and the posterior apices and posterior border of the upper lobe being the parts of the lung least used, we need not wonder that the posterior apices and the posterior borders of the upper lobe are the seats of election for pulmonary phthisis. This is of great practical importance, for in an early phthisis, it is the apices posteriorly which we should never fail to examine.

There are many other reasons why pulmonary phthisis specially affects the apices and upper posterior parts of the lung, but we have not now time to consider those. I wish now to take up with you the subject of age and pulmonary phthisis, for I wish to point out an interesting relationship between tubercular disease of the lungs and of other organs, and the growth and development of these organs.

You are all aware that tubercular disease is met with frequently affecting the intestine and the brain. You are also aware, I think, that whilst lung tubercle is the disease of adult life, intestinal tubercle is the disease of boyhood or girlhood, and brain tubercle the disease of infancy or childhood. Why is it that the liability of those different parts to tubercular disease should differ with age so markedly? This is, I believe, explained by differences in the periods of completion of growth in those different parts. Brain growth is completed earliest. You all know how big a child's head is compared with its body, and weight statistics show that a child's brain increases in bulk comparatively slightly after the fourth year. Further, the abdominal organs are proportionately large in childhood, it may be said because at this period of life digestion and assimila-

tion are all-important. But with puberty and adolescence comes the need for energising, and the energising or oxidising organs, the lungs, then attain their maximum of growth. Growth therefore may be said to be completed first in the brain, secondly in the abdominal viscera, and thirdly in the lungs. This is precisely the order in which tubercle shows itself in those parts, so that we may enunciate it as a law that tubercle tends to occur after the exuberant nutritive power required for growth is exhausted. A similar occurrence can be recognised in connection with the times of onset of tubercle in the larynx, testis, and also in the joints, but this I need not refer to further here.

Now let us make a little *resumé*. We have seen that pulmonary phthisis tends specially to show itself amongst those in whom a faulty nutritive condition of lung and of body generally, exists, as the result of absence of sunlight, fresh air, and exercise. Secondly, we have seen that tubercular disease affects the lung, as it does other organs, at times after the excessive nutritive energy, required for growth, has been exhausted. From this we can readily understand how phthisis can be hereditary, innate, or acquired. In hereditary phthisis we recognise the deficient nutritive power of the parents manifesting itself in precisely the same way in the children. In innate phthisis we recognise the lessened nutritive vigour manifested by rheumatism, cancer, asthma, insanity or alcoholism in the parents, showing itself as pulmonary phthisis in the children. Of acquired phthisis the special causes are numerous. Occupation, previous disease, exposure, excess, injury, all can play their part in inducing that degree of lowered vitality of lung and body which tubercle requires in order to take its root. In this connection, too, I would mention the possibility of infection. It has always to be borne in mind, but inasmuch as the powers for harm of the tubercle germ are so much dependent on the nutritive condition of the soil, I place it in a subordinate position. The great French physician Beau said long ago that consumption is a disease which does not begin, but which finishes, and I think that all subsequent knowledge, when properly interpreted, amply bears this out. When, as the result of faulty constitutional endowment, of faulty surroundings, or of both of those combined, the nutritive condition of the individual has fallen below a certain level, tubercle steps in and finishes the work. And now let us

consider if from these very general and rather desultory considerations as regards the etiology of phthisis, we can deduce conclusions of practical value in its treatment.

First of all, let me point out that there is no doubt whatever that the ravages of phthisis, like the stresses of poverty, will gradually become less. As the conditions of life improve more and more, the vulnerability to tubercle will correspondingly diminish, and with more sunlight and fresher air, with cleanliness, which means disinfection, the powers for harm of the tubercle germ will be lessened. That anything in the shape of an antitoxin will be discovered which will be practically useful, I do not believe. Of course we all recognise the importance in therapeutics of tuberculin, but tubercular disease is not a self-limiting disease, or a disease which leaves the individual protected against future attacks.

Well now, let us come to the points for treatment. Under this, we should first consider occupation, for it is often just about the time that occupation has to be decided upon, that the phthisical tendency is apt to show itself. When we find an individual who, constitutionally, or as the result of disease, is weakly, we should advise against an occupation which is too sedentary and confining. The ideal would be to place him, as it were, further back in civilisation, to send him to some better climate nearer the sun, to where he could spend the greater part of the twenty-four hours in the pure open air. An ideal can seldom be realised, but it is evident that such individuals should not work in large towns, in offices, shops, or factories, but should rather seek an open-air occupation, or an occupation in the country. It is no easy matter to choose a healthy occupation, or to change an unhealthy for a less unhealthy one; but, for example, I have seen a complete arrest of phthisical disease in a watchmaker when he left his confined, ill-ventilated, gas-lighted room, and took to work as a butcher in the slaughter-houses, and I have seen a similar arrest in a young woman when she left her millinery work in town for a housemaid's place in the country.

Now here let me point out a very important matter. This is, that physical health and constitutional health are often very different things. For example, one often meets with individuals who, physically, are particularly good specimens of humanity, but yet who readily fall victims to phthisis.

Such men are well adapted to an open-air life and physical exercise, but there is no doubt that the confinement and bad air of towns often affects them in a specially injurious manner. Let me give you a very good illustration of this from my own experience :—Some years ago I was working at the relationship between height, chest measurement, respiratory capacity, and extent of skin surface, amongst men of different statures. I had, therefore, to seek for a specimen of a well-built man above the average height, and to get such I applied to the Chief of the Police in Edinburgh. He very kindly allowed me to examine one who was considered one of the finest men in the Force here. This man had an excellent family and personal history, and had been in the Force for some two years. Previously he had been a ploughman in his native village in Perthshire. He was twenty-four years of age, 6 ft. 2½ in. in height, and weighed 15 st. 5 lbs. His chest measurement was 45 in., and his respiratory capacity 327 cub. in. I remember at the time remarking to him that, as regards his arms, he was not in such good condition as I should have expected, and his reply was that they had got much smaller and softer since he had left the plough. Some three years afterwards, my friend, Dr H. Littlejohn, asked me to see with him a policeman suffering from rapidly advancing phthisis. I went and found that the patient was this man. I have no hesitation in saying that, had he remained at the plough, he would not at this early age have succumbed to phthisis.

Next, you can all understand the importance of early diagnosis in phthisis. In this connection remember that in the most serious and incontrollable examples of lung tubercle, cough is often not complained of, indeed, its existence is often denied, for a long time. The patient is simply noticed to be thin, he feels weakly, his appetite and digestion are faulty, his pulse is soft and a little rapid. In such cases the physical signs of lung mischief are very slight, and will be manifested only at the apices posteriorly. The absence of cough in those cases is due to the fact that there is tubercle deposition, and very little or no bronchial catarrh. Later on, when the tubercle softens and breaks down, the cough is severe enough, but at first it may be hardly marked at all.

When the symptoms of phthisis have clearly manifested themselves and when the examination of an apex confirms the

diagnosis, what are we to do? To this question I would answer, try to get an arrest in the disease, and then judge as to what had best be done. For this purpose we are in the habit of insisting on stoppage of work, and we usually apply a small blister over the affected apex, and prescribe Begbie's mixture internally. After a couple of days' rest in the house, so as to let the blister get over the acute stage, we advise a sojourn for a week or two in the country. A change of air and scene often makes all the difference in those cases. At the end of this time we can decide as to what is to be done with the patient, for we have to be specially careful as regards sending the patient away on a long voyage, when the disease is likely to go on progressing.

When the cough is very troublesome, a remedy which I can highly recommend is the intra-laryngeal injection of menthol. We use the menthol dissolved in parolein in the strength of 20 per cent. of this ζ i injected into the larynx once or twice daily has often a wonderfully beneficial effect. Not only does it act as an antiseptic, but it acts as an anæsthetic, and the constant coughing, which is due to a hyperæsthetic condition of the larynx rather than to the amount of secretion to be expectorated, is greatly relieved.

Then, of course, we are careful to tone up the general health by diet, cod liver oil, chemical foods, and such drugs as arsenic, digitalis, etc.

As you all know, a great number of so-called germicide remedies have been employed in phthisis, iodoform, guaiacol, creosote, terebine, etc. Of such, the one which I can very specially recommend is the simplest, and perhaps the cheapest, viz., tar water.

Here let me remark that I do not wish for a moment to ask you to believe that tar water will always prove beneficial. You are all acquainted with what we may call the rule, viz., that our powers of influencing beneficially a disease are in the inverse proportion to the number of drugs which have been advocated for it. When therefore I say that I can specially recommend tar water, I mean that, in my opinion, it is more useful than it is ordinarily thought to be. We have at present in the ward several cases in which we believe it to have been of use. I shall only, however, describe to you one of these, and I select this particular case not only because it has been benefited

to some extent by tar water, but because it illustrates certain other features of interest in connection with the causation and symptoms of phthisis.

P. N., aged twenty, a miner, from Fifeshire, was admitted to Ward XXXI., December 30th, 1897, complaining of weakness, indigestion, and cough.

His family history is quite satisfactory, his home surroundings have been very good, he has always been well fed, and has avoided alcohol.

As regards previous illnesses. In childhood he had scarlet fever, which, he tells us, was followed by "congestion" of the lungs. At the age of fourteen, he started work as a miner, and soon after this he had an attack of inflammation of the lungs, followed by bronchitis, ever since which, he tells us, he has not been so strong. He gave up miner's work and went into a draper's shop, but this did not seem to improve his condition. The indoor work and the draughts caused him, he tells us, to suffer from pains in the chest, so that he gave up this work and started work as a groom and coachman to a doctor in the country. This entailed a certain amount of physical work and practically outdoor life, and apparently, as the result of this, he got fairly strong; so well indeed that after a time he gave it up, and felt strong enough to start again as a miner. At this mining work he kept well for two years, and then he began to suffer from indigestion and stomach pains.

His present illness, he tells us, began about five months ago. His indigestion was then so bad that he could take no food in the morning. He could take food later on in the day, but this he sometimes vomited. He endeavoured to keep at work, however, until three months ago, when he became so weak that he had to give up work altogether. About a week before his admission he caught a cold, as the result of which a cough started, for which, and for the weakness and indigestion, he has come to the Infirmary.

State on admission.—He is a pale, delicate-looking lad, in height 5 ft. 9 in., and in weight 8 st. $\frac{1}{2}$ lb. His muscles are weak, and tapping over the pectoral muscles induces well-marked fibrillar contraction, the idio-muscular wave and also the running waves. His pulse varies between 70 and 80, and his temperature between 99° and 101° F.

Respiratory system.—Respirations 20 per minute. He has a persistent cough, which is worst in the morning, and occasionally causes vomiting. Sputum, muco-purulent and somewhat nummulated, shows numerous tubercle bacilli. He has never had hæmoptysis. On examination the chest is found to be flattened, especially on the right side, where there is somewhat increased vocal fremitus. On percussion there is an impairment over the left apex posteriorly, and marked dulness posteriorly over the right upper lobe. There is also distinct percussion impairment above, over, and below the right clavicle. By careful percussion the upper limit of the right apex can be found to be lower than that of the left.

On auscultation prolonged expiration, cavernous breathing, slight coarse crepitation, bronchophony, and pectoriloquy can be heard over the right upper lobe, especially posteriorly. Over the left upper lobe, posteriorly, interrupted breathing is distinguishable, with some increase in the vocal resonance.

Pulse between 70 and 80 per minute, regular, soft and compressible. The circulatory system is otherwise practically normal, and under the integumentary and urinary systems all that need be remarked is that the skin is somewhat moist, and that the urine is neutral in reaction.

As regards his digestive system, it is to be remarked that there is evidently some functional impairment. His appetite is fairly good, but shortly after meals he feels a considerable amount of discomfort in the stomach, and has heartburn and flatulence. He has never had diarrhoea, rather, indeed, constipation.

This, then, was our patient, as you saw, a typically consumptive-looking youth, and now let us consider together any points in connection with the etiology and symptoms in his case which appear of interest.

As regards etiology, we are, I think, forced to assume that his heredity, and home and work surroundings have been fairly favourable, and that the lowered nutritive condition which permitted the tubercle to take origin was mainly the result of previous illnesses. As a child, he had scarlatina, followed by lung inflammation, and this must have lowered his vitality to some extent. He was yet well enough, however, at the age of fourteen, to begin work as a miner, when fresh lung inflammation, followed by bronchitis, occurred. It was probably at this

time that the tubercle took root, for his feeling of illness and cough were so marked and continued that he thought a less exposed life would suit him better. But, contrary to what he expected, although just as we should have expected, the life in a draper's shop suited him still less well, and then he got work as a groom and coachman. This suited him much better, so that after two years of it he felt so well that he tried again his miner work. But again the underground and sunless life told on him, not apparently by setting up more lung mischief, because he seems to have had but little cough, but by impairing appetite and digestive power, and so causing general in-nutrition. Then, finally, an exposure set the latent mischief at his right apex into fresh action, and possibly also caused involvement of his left apex.

So much then for the etiology. We had a patient in whom the history of his illness, his appearance, his symptoms, and the results of physical examination all pointed to grave tubercular lung disease. What were we to do for him?

Observe, in the first place, that we could expect to do but very little. The lung mischief was extensive and bi-lateral, so that we could not expect anything like real healing, and there was considerable fever, indicating that the mischief was progressing. Further, he was very thin, his digestive and assimilative powers were feeble, so that not only had he little tissue to come and go upon, but there seemed little chance of his ever being able to equal his daily waste by daily supply. You all know that it is always a good sign when in a phthysical patient the digestive organs have not given way, but in our patient they had been giving way for some months. In him, therefore, the duration of his disease might be said to be limited to months, and we realised that at any moment a very acute downward progress might begin. In his lungs we believed that the tubercular deposit was much more widely diffused than the physical signs indicated. During the months before his admission, when, as he told us, he had no trouble with his cough, but was only feeling weakness and indigestion, tubercle was almost certainly being deposited in his lungs. It was not, however, breaking down, or setting up bronchial catarrh, and so cough was not complained of. We realised, further, that this was just the sort of case in which intestinal or

laryngeal tubercle might at any moment supervene, so that we could not expect to do much for him.

On his admission, he was put on light diet, with Begbie's mixture and creosote in two minim doses, and he was encouraged to get up daily, and move about in the ward, and in the corridors, and outside, whenever weather permitted. After three weeks of this, no improvement was manifest. Indeed, he was evidently losing ground, for though his pulse range and temperature range showed little change, his weight fell from 8 st. $\frac{1}{2}$ lb. to 7 st. 11 lbs. Tar water in $\bar{3}$ i doses, thrice daily after food, was then substituted for the creosote, and now after four weeks of this there is certainly improvement. The temperature range has fallen—for the last few days it has been rather subnormal, the pulse is quieter, at times beating between 60 and 70, and his weight has steadily increased, so that now he is 8 st. 4 lbs. He is feeling himself better, the moist sounds at his apex are less, and there is less cough and expectoration.

We can, in the circumstances, hardly expect much more improvement. We can indeed hardly expect that the improvement which he has made will be long continued, but we feel that we have, at anyrate, materially improved his condition.

Tar water does not suit every case. It sometimes impairs appetite and digestion, but when it can be taken in the quantity in which this patient is taking it, or preferably in larger quantity, it is often wonderfully beneficial.

